ARJUNA JEE 2023

Mole Concept

DPP-09

1. Concentrated aqueous sulphuric acid is 98% H_2SO_4 (w/v) and has a density of 1.80 gmL^{-1}. Molarity of solution

(1) 1 M (2) 1.8 M
(3) 10 M (4) 1.5 M

2. Mole fraction of solvent in aqueous solution of NaOH having molality of 3 is

(1) 0.3 (2) 0.05
(3) 0.7 (4) 0.95

3. Molarity of H_2SO_4 is 18 M. Its density is 1.8 g/cm^3, hence molality is :

(1) 18 (2) 100
(3) 36 (4) 500

4. The molarity of a solution obtained by mixing 750 mL of 0.5 (M) HCl with 250 mL of 2 (M) HCl will be:

(1) 1.00 M (2) 1.75 M
(3) 0.975 M (4) 0.875 M

5. The amount of anhydrous Na_2CO_3 present in 250 ml of 0.25 M solution is

(1) 6.225 g
(2) 66.25 g
(3) 6.0 g
(4) 6.625 g

6. How many grams of concentrated nitric acid solution should be used to prepare 250 mL of 2.0M HNO_3? The concentrated acid is 70% HNO_3.

(1) 90.0 g conc. HNO_3
(2) 70.0 g conc. HNO_3
(3) 54.0 g conc. HNO_3
(4) 45.0 g conc. HNO_3

7. A 5.2 molal aqueous solution of methyl alcohol, CH_3OH, is supplied. What is the mole fraction of methyl alcohol in the solution?

(1) 0.100 (2) 0.190
(3) 0.086 (4) 0.050

8. 50 mL of an aqueous solution of glucose contains 6.02×10^{22} molecules. The concentration of solution is:

(1) 0.1 M (2) 1.0 M
(3) 0.2 M (4) 2.0 M

9. The amount of H_2SO_4 present in 400 mL of 0.1 M solution of the acid is:

(1) 2.45 g (2) 3.92 g
(3) 9.80 g (4) 4.9 g

10. Molality is expressed in units of

(1) mol kg^{-1} (2) mol L^{-1}
(3) mol L^{-1} s^{-1} (4) mol^1 g^{-1} s^{-1}

Answer Key

1.	(3)	**6.**	(4)
2.	(4)	**7.**	(3)
3.	(4)	**8.**	(4)
4.	(4)	**9.**	(2)
5.	(4)	**10.**	(1)

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